PS 285

DUAL CHANNEL BOOSTER POWER SUPPLY

USER MANUAL

October 2013

This product is designed and manufactured by:
ASL Intercom B.V.
Zonnebaan 42
3542 EG Utrecht
The Netherlands
Phone: +31 (0)30 2411901
Fax: + 31 (0)30 2667373
E-mail: info@asl-inter.com
Web: www.asl-inter.com

CONTENT OF THIS USER MANUAL

1.0 SAFETY INSTRUCTIONS 3
2.0 GENERAL DESCRIPTION PS 285 4
3.0 MAINS POWER 4
4.0 MECHANICAL INSTALLATION 5
5.0 FRONT PANEL CONTROLS 5
6.0 REAR PANEL CONNECTORS 5
7.0 TECHNICAL SPECIFICATIONS 6
8.0 PS 285 BLOCK DIAGRAM 6
9.0 PARTY LINE, TECHNICAL CONCEPT 7
10.0 CABLING 7
11.0 EARTHING CONCEPT 8
12.0 SYSTEM CONFIGURATION 8

1.0 SAFETY INSTRUCTIONS

Please always follow these instructions to help ensure against injury to yourself or damage to the system

1) Read all safety and operating instructions before you operate the apparatus.

2) Retain all safety and operating instructions for future reference.

3) Read all warnings on the apparatus and in the safety and operating instructions.

4) Follow all instructions for installation, operating and use.

5) Unplug the apparatus from the AC power outlet before cleaning. Use only a damp cloth for cleaning the exterior of the apparatus.

6) Do not use accessories or attachments not recommended by the manufacturer, as they may cause hazards and void the warranty.

7) Do not operate this apparatus in high humidity areas or expose it to water or moisture.

8) Do not place the apparatus on an unstable cart, stand, tripod, bracket or table. The apparatus may fall, causing serious personal injury and damage to the apparatus.

9) Do not block or cover any openings in the apparatus. These are provided for ventilation and protection from overheating. Never place the apparatus near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Do not place the apparatus in an enclosure such as a cabinet without proper ventilation.

10) Operate the apparatus using only the type of power source indicated on the marking label. Unplug the apparatus' power cord by gripping the power plug, not the cord.

11) Insert the plug properly. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized AC line plug has two blades with one wider than the other. This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to replace the obsolete outlet. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician to replace the obsolete outlet.

12) Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the apparatus.

13) Do not overload wall outlets or extension cords, as this can result in a risk of fire or electrical shock.

14) Unplug this apparatus during lightning storms or when unused for long periods of time.

15) Never insert objects of any kind into the apparatus through openings, as the objects may touch dangerous voltage points or short out parts. This could cause fire or electrical shock.

16) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

2.0 GENERAL DESCRIPTION PS 285

The PS 285 is a dual channel booster power supply which functions as an auxiliary power supply should the main power supply (a PS 279 master station or a PS 289 separate power supply) be insufficient to drive the required number of user stations.
The unit is placed in the network to feed a dedicated group of user stations
See section 12 “System Configuration”).

The PS 285 is also used in case the intercom party lines are very long as a result of which - at a certain distance from the main power supply - the available line power voltage is in danger to drop below the required minimum level.

The PS 285 is fully protected and can safely drive up to 20 Pro Series beltpacks or 10 remote 2-ch speaker stations operating at full power.

Remotely activating the PSU of the PS 285:
As soon as line power, provided by the main power supply in an intercom system, is sensed at an input connector of the PS 285, its power supply module is activated for the referring channel.
The yellow “On” LED of that channel lights up.
If no line power is sensed, the referring channel of the PS 285 is in “Standby Mode” and its green “Standby” LED is illuminated (see also “Powering up” in section 3).

3.0 MAINS POWER

WARNING
This appliance must be earthed

The PS 285 may be connected to a mains power outlet of 100 - 240 V AC (50 - 60 Hz), 100 watts. The outlet should have a clean earth. Avoid using mains power outlets which also power dimmer controlled lighting equipment.
Fuse type all voltages: T 1250

The wires in the mains lead are color coded:
Green/yellow: safety ground
Blue: neutral
Brown: live

In case the colors of the wires in the mains lead do not correspond with the colored markings of the terminals in your plug, proceed as follows:

- The wire that is colored green-and-yellow must be connected to the terminal in the plug, which is marked with the letter “E”, or by the ground symbol, or is colored green.
- The wire that is colored blue must be connected to the terminal that is marked with the letter “N” or colored black.
- The wire that is colored brown must be connected to the terminal marked with the letter “L” or colored red.

The green-and-yellow wire of the mains cord must always be connected to the electrical installation safety earth or ground. This is essential for personal safety as well as for proper operation of the PS 285 and connected user stations.

This wire is internally connected to all exposed metal surfaces. Any rack framework into which this unit might be mounted shall be connected to the same grounding circuit.

The PS 285 employs professionally designed audio input and output circuits which do not require the disconnection of any safety earth to avoid hum loops.

Powering up procedure:

- Make sure that the red power switch on the left side of the front panel is OFF.
- Connect the power cord to the rear of the station.
- Plug the other end of the power cord into a properly grounded mains outlet.
- Turn on the power with the red button. The red overload LED will light up for about 3 seconds and then extinguishes. The green LEDs of channel A and B are now lit, indicating that the PS 285 is in standby mode.
- As soon as a powered party line (coming from the master power supply in an ASL intercom system) is connected to an intercom line input of the PS 285, the yellow ‘On’ LED of the referring channel lights up, indicating that line power is supplied to the intercom line output connector of that channel.

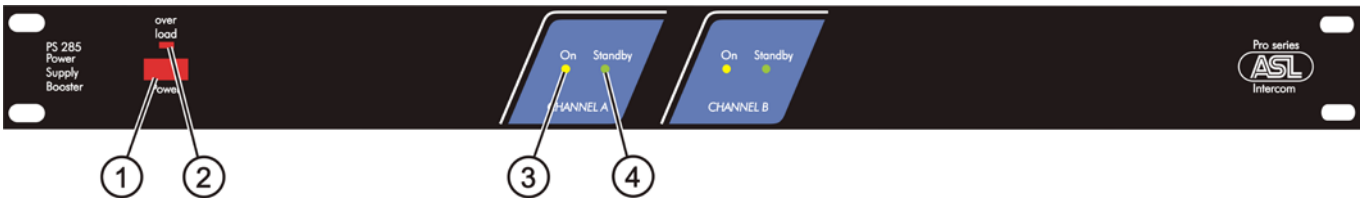
4.0 MECHANICAL INSTALLATION

For this unit a vertical rack space of 1RU (44,5 mm) is required. It is not necessary to provide rear support by extra bracing or shelving.
Adequate ventilation must be provided by allowing sufficient space around the sides and rear of the unit to ensure free circulation of air.

Forced cooling is not required.

The power supply regulator is mounted on the bottom of the PS 285. After a period of time it will feel hot to the touch on top and bottom.
This is normal and should be no cause for alarm.

5.0 FRONT PANEL CONTROLS



1 POWER ON/OFF push button
To switch mains power on or off

2 OVERLOAD LED
This red LED illuminates if the circuit breaker shuts off line power due to overload.
A cause for overload can be too many user stations connected or a short circuit in the interconnecting cables.
The circuit breaker resets automatically 3 seconds after the cause of the overload has been removed and restores the line power, provided the PS 285 is not in standby mode. During short circuit, the LED flashes every 3 seconds.

3 "ON" LED (one for each channel)
This yellow LED illuminates if line power is detected at the intercom line input connector.
The standby mode (see #4) is abolished and the referring channel of PS 285 is now supplying 30V DC line power to its connected user stations.

4 STANDBY LED (one for each channel)
This green LED is lit if no line power is detected at the intercom line input connectors.
The referring channel of the PS 285 is now in standby mode

6.0 REAR PANEL CONNECTORS

5 DC INPUT connectors
These connectors accept 24 – 30 V DC as a back-up power source should mains fail or not be available

6 INTERCOM LINE INPUT connectors
These XLR-3 connectors are the sense inputs and should be connected to the intercom lines coming from a PS 289 separate power supply or from a PS 279 master station (a connector for channel A and a connector for channel B)

Pin assignments:
pin 1: 0V / ground shield
pin 2: +30V power wire
pin 3: audio wire

7 INTERCOM LINE OUTPUT connectors
Provided line power is detected at the XLR-3 input connectors (#6), 30V DC line power is supplied to the user stations which are connected to these XLR-3 output connectors via standard microphone cable. There are 2 connectors for channel A and 2 connectors for channel B.
Pin assignment: same as the input connectors

8 FUSE holder
A fuse protects the PS 285 against severe internal damage in case of malfunction of the power section. **Before replacing the fuse the mains cord must be removed.**

9 MAINS INLET
IEC Mains connector.

7.0 TECHNICAL SPECIFICATIONS

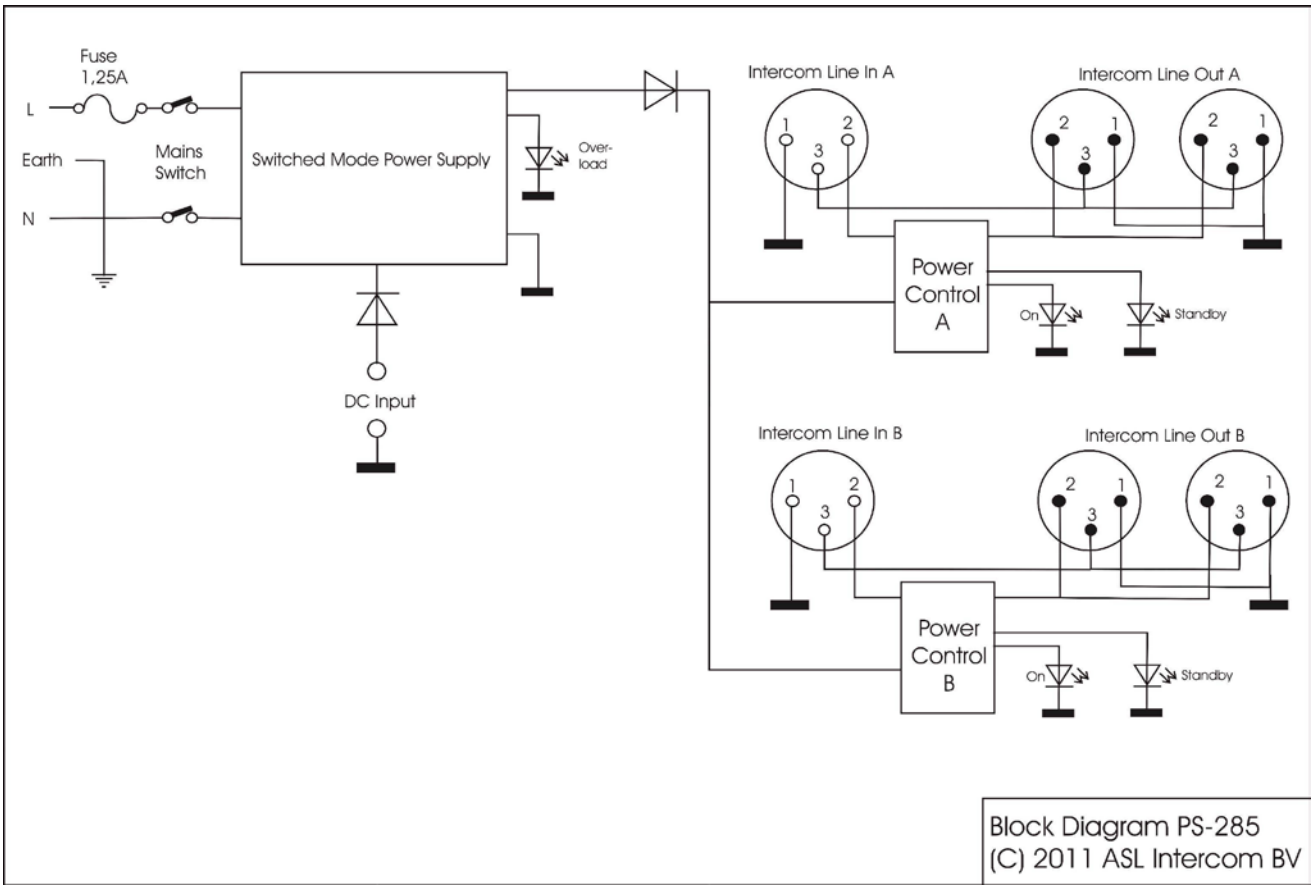
Switch Mode Power Supply
Mains voltage: 100 - 240V AC, 50/60Hz
Output voltage: +30V DC (+/- 5%)
Max. output power: 75 Watts
Circuit breaker delay time: 0.2 sec.
Automatic reset time: 3.0 sec.

PS 285 Dimensions & Weight
Width: 19" (483 mm) / Height: 1U (44,5 mm)
Depth: 150 mm / Weight: 1.63 kg

0 dBu defined as 775 mV into open circuit

ASL reserves the right to alter specifications without prior notice

8.0 PS 285 BLOCK DIAGRAM



9.0 PARTY LINE, TECHNICAL CONCEPT

User stations in an ASL intercom system are connected via one or several 'party lines'. A party line offers two way ('full duplex') communication and consists of standard microphone (multi-pair) cable. One wire is used as an audio line, one as a power line and the screen of the cable functions as earth/return. Current drive is used for signal transfer. Each station utilizes a current amplifier to amplify the microphone signal and place it on the common audio line where, due to the constant line impedance (situated in the power supply between XLR pin 3 and 1), a signal voltage is developed which can be further amplified and sent to the headphones or loudspeakers.

This principle has three advantages:

- the use of a single audio line allows several stations to talk and listen simultaneously
- due to the high bridging impedance offered by each station, the number of stations on the party line has no influence on the level of the communications signal
- power and audio to the intercom stations use the same cable

The Call signal is also sent as a current on the audio line. It develops a DC potential over the line impedance which will be sensed by each station and interpreted as a Call signal.

10.0 CABLING

The intercom lines (the 'party lines') are of the shielded two-conductor microphone cable type. The intercom line connectors are of the XLR-3 type. Audio and Call signals are on XLR pin 3, DC power is on XLR pin 2.
XLR pin 1 is connected to the shield of the cable which functions as the common return for audio and power.

The audio signal is transferred in an unbalanced way (see 'Party Line, Technical Concept').
To avoid earth loops (hum), the possible effect of electromagnetic fields and to minimize power loss, certain rules have to be obeyed when installing the cabling of an intercom system :

Use high quality cable
Use high quality microphone cable (shielded two conductor cable, minimum 2x 0.30 mm2).
In case multi-pair microphone cable is used, it should be of high quality and each pair should consist of two conductors (minimum 2x 0.15 mm2) with separate shield and an overall shield.

Use flexible cable
Use flexible single and multi-pair microphone cable instead of cable with solid cores, especially when the cable is subjected to bending during operation or installation.

Cable screens to XLR pin 1
The screen of each separate microphone cable and/or the screen of each single pair in a multi-pair cable, should be connected to pin 1 of each XLR-3 connector. Do not connect these screens to the metal housing of ASL unitst or XLR-3 wall boxes. See section 'Earthing Concept'.

Connect metal cable trunks, wall boxes and overall multi-pair cable screens to clean earth
Metal cable trunks, metal wall boxes and overall multi-pair cable screens should be interconnected and, at the 'central earth point' in the intercom network only, be connected to a clean earth or a safety earth. (see section 'Earthing Concept').

Keep metal connection boxes and cable trunks or pipes isolated from other metal parts
Metal trunks or pipes for intercom cables and metal connection boxes should be mounted in such a way that they are isolated from any other metal housing or construction part.

Keep cables parallel as much as possible
When two (multi channel) units in a network are connected by more than one cable, make sure that these cables are parallel to each other over the whole distance between those units. When using multi-pair cable, parallelism is ensured in the best possible way.

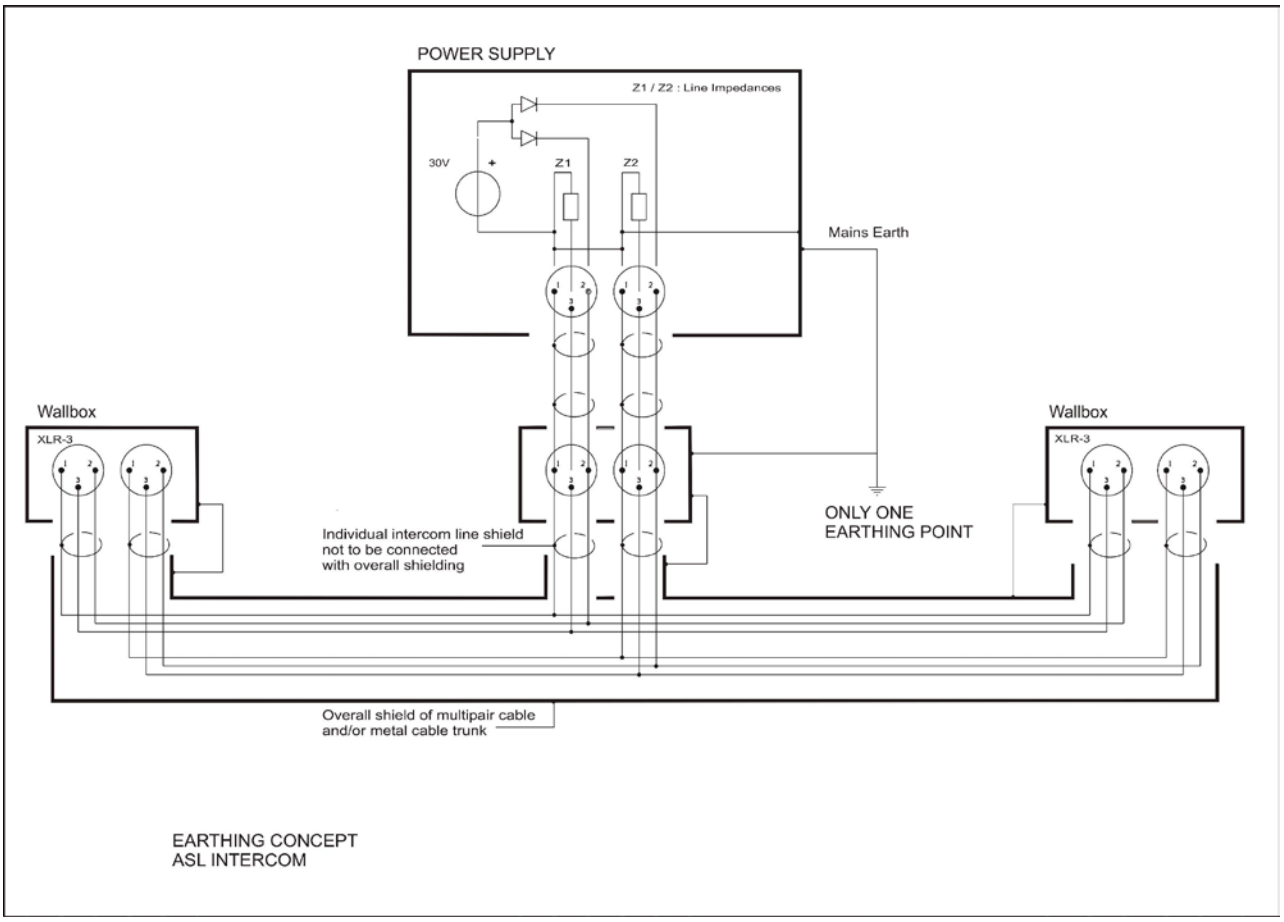
Avoid closed loops
Always avoid that intercom cables are making a closed loop. So-called 'ring intercom' should not physically be cabled as a ring..

Keep cables away from electromagnetic sources
Keep intercom cables away from high energy cables, e.g. 115/230/400V mains power or dimmer controlled feeds for spotlights. Intercom cables should cross high energy cables at an angle of 90º only. Intercom cables should never be in the same trunks as energy cables.

Place power supply in a central position
In case of a system powered by a separate power supply: In order to diminish power losses, place the power supply as close as possible to where most power consumption occurs, in other words most user stations are placed.

ASL powered units to a 'clean' mains outlet
Master stations or power supplies should be connected to a mains outlet with a clean earth. Other audio equipment may be connected to this mains outlet, but avoid using an outlet which also powers dimmer controlled lighting systems.

11.0 EARTHING CONCEPT



12.0 SYSTEM CONFIGURATION